

H10577

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE

## DESCRIPTIVE REPORT

Type of Survey **HYDROGRAPHIC**  
Field No. **WH-10-<sup>10</sup>9-94**  
Registry No. **H-10577**

### LOCALITY

State **GEORGIA**  
General Locality **ATLANTIC OCEAN**  
Sublocality **5 NM SOUTHEAST OF  
TYBEE INLET**

**19 94**

CHIEF OF PARTY  
**CDR J. D. WILDER, NOAA**

### LIBRARY & ARCHIVES

DATE **AUG 16 1995**

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U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTER NOS.

HYDROGRAPHIC TITLE SHEET

H-10577

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled  
in completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

WH-10-10-94

State Georgia

General locality Atlantic Ocean

Locality 5 nm Southeast of Tybee Inlet

Scale 1:10,000 Date of Survey Oct. 5 - Nov. 15, 1994

Instructions dated August 25, 1994 Project No. OPR-G115-WH

Vessel NOAA Ship WHITING S-329, VESNO 2930, 2931, 2932

Chief of Party Commander John D. Wilder, NOAA  
J.D. Wilder, S.R. Barnum, W.G. Kilt, A.L. Beaver, E.W. Berkowitz, K.A. Pavele, C.E. Parrish, J.T. Michalski, E.A. Beard,  
M.M. Clisternelli, F.R. Cruz, J.C. Gaskin, B.C. Detrich

Surveyed by M.M. Clisternelli, F.R. Cruz, J.C. Gaskin, B.C. Detrich

Soundings taken by echo sounder DSF-6000N

Graphic record scaled by WHITING Survey Personnel

Graphic record checked by WHITING Survey Personnel

Protracted by N/A Automated plot by HP 7959B, Bruning

Verification by ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL

Soundings in MLLW ~~Meters~~ Feet


REMARKS: Time Zone used, 0 (UTC)

Side Scan Sonar for item investigations only

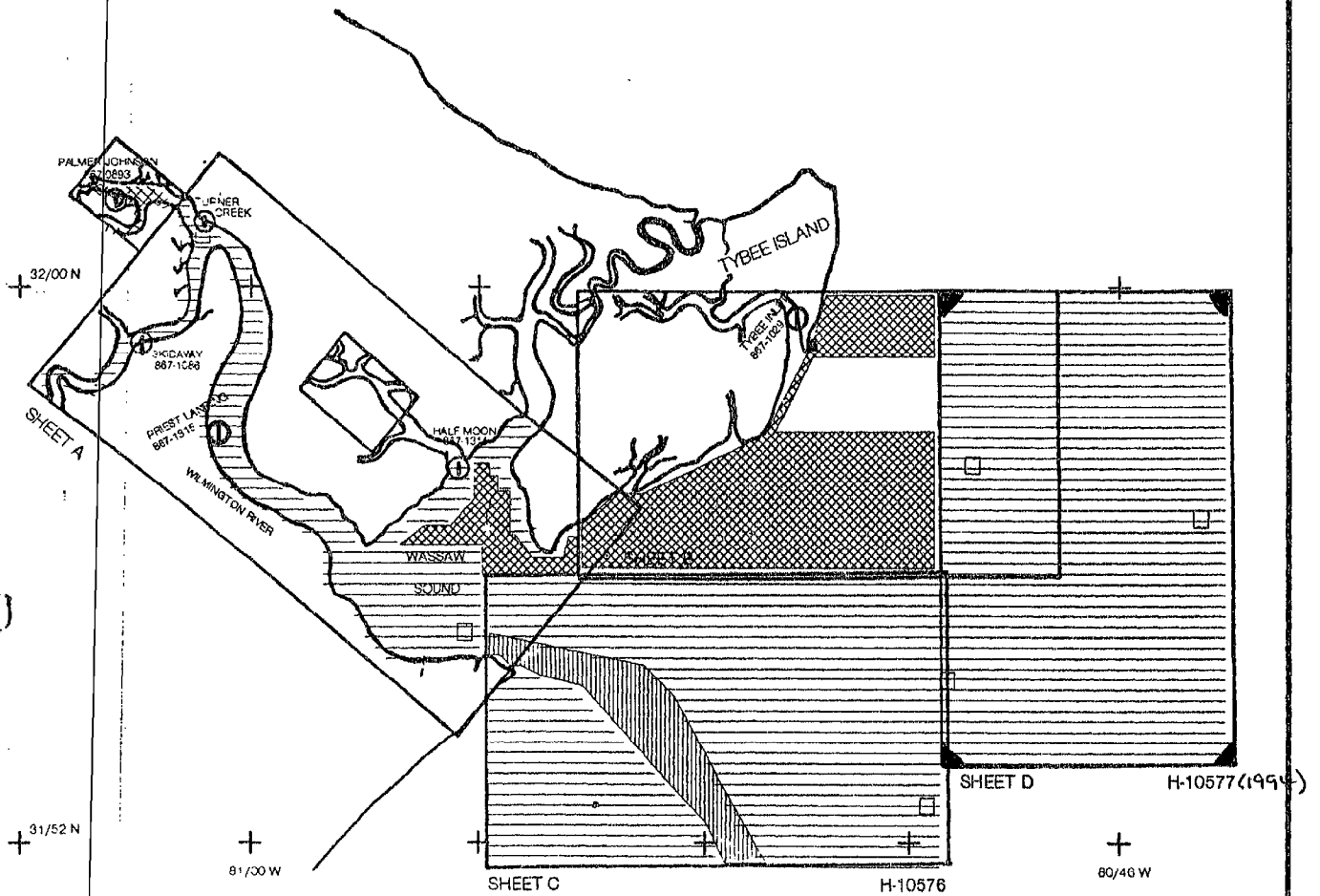
NOTES IN THE DESCRIPTIVE REPORT WERE MADE IN RED

DURING OFFICE PROCESSING.

AWOIS + SURF ✓ RWD 8/95

8/16/95 

PROGRESS SKETCH  
 OPR - G115 - WH  
 HYDROGRAPHIC SURVEY  
 WASSAW SOUND AND  
 WILMINGTON RIVER, GEORGIA  
 SEPTEMBER - NOVEMBER 1994



SEPT	OCT	NOV
2	63	9
51	1746	478
0	7	13
37	67	181
1	10	7
2	4	0
1	0	0
5	25	13

SQ NM SOUNDINGS  
 LNM SOUNDINGS  
 ITEM INVESTIGATIONS  
 BOTTOM SAMPLES  
 VELOCITY CASTS □  
 TIDE GAUGES INSTALLED ⊕  
 CONTROL STATION INSTALLATIONS ■  
 DAYS AT SEA  
 HYDROGRAPHY

NOAA SHIP WHITING  
 JOHN D. WILDER, CDR  
 COMMANDING

SCALE OF CHART 1:1512

**DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY  
OPR-G115-WH  
WH-10-10-94  
H-10577**

**NOAA SHIP WHITING  
CDR John D. Wilder, NOAA  
Commanding Officer**

**A. PROJECT**

The purpose of project OPR-G115-WH is to provide contemporary hydrographic survey data for existing nautical charts, and a special commemorative chart which is being proposed for the area covering the yachting events during the 1996 Summer Olympic Games. A high volume of traffic, of both participating and non-participating yachts and racing boats, is expected in Wilmington River and Wassaw Sound, Georgia. Large barges will be used to tow competing boats or for transporting international athletes, while others will be positioned in Wassaw Sound for logistical support. This project responds to a request from the Atlanta Committee for the Olympic Games (ACOG), U.S. Army Corps of Engineers, and the U.S. Coast Guard.

Survey operations were conducted in accordance with Hydrographic Project Instructions OPR-G115-WH dated August 25, 1994. There are no changes to these project instructions.

Project OPR-G115-WH was designed to consist of four survey sheets. The survey described in this report addresses sheet "D". The survey was assigned field sheet number WH-10-10-94 and registry number H-10577.

**B. AREA SURVEYED**

Hydrographic survey H-10577 is 5 nautical miles southeast of Tybee Inlet, Georgia. Sheet limits are bounded by 31° 59' 59" N and 31° 53' 13" N to the north and south respectively, and by 080° 43' 50" W and 080° 48' 39" W to the east and west respectively.

Survey operations commenced on October 5, 1994 (DN 278), and were completed on November 15, 1994 (DN 319).

### C. SURVEY VESSELS

WHITING (VESNO 2930) and Launches 1015 and 1014 (VESNO 2931 and 2932) were used for main-scheme sounding data acquisition, side scan sonar, crosslines, bottom samples and velocity casts. Launch 1015 acquired aids-to-navigation detached positions, and was used for diver investigations. Additionally, WHITING's Sea-Ark collected bottom samples for this survey. Data from the Sea-Ark was entered as VESNO 2939.

No unusual vessel configurations were used nor were any problems encountered.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data acquisition and processing were accomplished using the HDAPS system with the following software:

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>DATE INSTALLED</u>
BACKUP	2.00	March 07, 1994
BASELINE	1.14	March 07, 1994
BIGABST	2.07	March 07, 1994
BIGAUTOST	3.01	March 07, 1994
BLKEDIT	2.02	March 07, 1994
CARTO	2.13	August 30, 1994
CLASSIFY	1.01	March 07, 1994
CONTACT	2.34	August 30, 1994
CONVERT	3.62	March 07, 1994
DAS_SURV	6.70	August 30, 1994
DIAGNOSE	3.04	August 30, 1994
DISC_UTIL	1.00	March 07, 1994
DP	2.15	August 30, 1994
DPCONVERT	1.01	June 17, 1994
DSNEDITS	1.02	August 30, 1994
EXCESS	4.31	August 30, 1994
FILESYS	3.24	August 30, 1994
GRAFEDIT	1.06	March 07, 1994
HIPSTICK	1.01	March 07, 1994
HPRAZ	1.26	March 07, 1994
INVERSE	2.01	March 07, 1994
LISTDATA	1.02	March 07, 1994
LOADNEW	2.10	March 07, 1994
LSTAWOIS	3.07	August 30, 1994
MAINMENU	1.20	March 07, 1994
MAN_DATA	2.01	March 07, 1994

NEWPOST	6.12	August 30, 1994
PLOTALL	2.30	August 30, 1994
POINT	2.10	March 07, 1994
PREDICT	2.01	March 07, 1994
PRESURV	7.09	August 30, 1994
PRINTOUT	4.04	August 30, 1994
QUICK	2.05	August 30, 1994
RAMSAVER	1.02	March 07, 1994
REAPPLY	2.11	August 30, 1994
RECOMP	1.02	March 07, 1994
SCANNER	1.00	March 07, 1994
SELPRINT	2.05	August 30, 1994
SYMBOLS	2.00	March 07, 1994
VERSIONS	1.00	March 07, 1994
ZOOMEDIT	2.30	August 30, 1994

Sound velocity corrections were determined using *CAT* version 2.00 and *VELOCITY* versions 2.10 and 2.11. The DGPS station was checked using *MONITOR* version 1.2. Program *DAILYDQA* ensured the proper functioning of the MOD-3 diver gauge.

There were no nonstandard automated acquisition or processing methods used.

#### E. SIDE SCAN SONAR EQUIPMENT

Side scan sonar (SSS) operations were conducted using an EG&G model 260 slant-range corrected SSS recorder and an EG&G 272-TH dual-channel, single frequency towfish. The towfish was operated on the 100 kHz frequency and configured with a 20° beam depression. Data were collected using the 50, 75 and 100-meter range scales. The following sonar equipment was used throughout the survey:

<u>VESNO</u>	<u>Type</u>	<u>S/N</u>	<u>DN</u>
2930	Towfish	16835	304-313
2930	Recorder	16670	304-313
2931	Towfish	16699	299
2931	Recorder	160492	299

On WHITING, the SSS towfish was deployed from a Reuland winch (model number 8377-XF5461A, S/N 814861A-1) using armored cabling in conjunction with an A-frame on the stern. The armored cable was connected to the SSS recorder via a slip-ring assembly.

On launch 1015, the SSS towfish was deployed using a Superwinch Model W115 in conjunction with an adjustable davit arm on the stern. The SSS towfish was towed with vinyl-coated Kevlar

cable and was connected to the recorder via a slip ring assembly.

In order to acquire the required 200% SSS coverage for AWOIS 2674 and 8918, main-scheme lines were run with 100 and 150-meter line spacing respectively. Adequate coverage was determined by producing an 'A' and 'B' swath plot and ensuring 100% coverage on each plot. The second 100% was run perpendicular to the first 100% aid in finding submerged features.

The SSS towfish was maintained at a height off the bottom of 8 to 20 percent of the range scale in use. SSS operations were limited to a speed-over-ground of 6.0 knots.

Confidence checks were performed by noting changes in bottom texture on the outer edges of the sonargram, and by running by the ship's anchor.

All potentially significant contacts in the survey area were measured off the sonargram and entered into an HDAPS contact table. Using the contact utility program WHITING hydrographers determined contact heights, positions and correlations to one another. Significant items were then further developed by echosounder investigation. Refer to Section N and to Separate V for more information. DATA APPENDED TO THIS REPORT.

## F. SOUNDING EQUIPMENT

A Raytheon Digital Survey Fathometer (DSF 6000N) echo sounder was used to measure water depths during the survey. The DSF-6000N produced a graphic record of the high frequency (100 kHz) and low frequency (24 kHz) depth. The high and low frequency digital depths were recorded by the HDAPS acquisition system. The high frequency depths were selected as the primary depths as shown on the sounding plots. In addition, echograms were carefully reviewed for significant features along the track line. Any features on the graphic record that were not selected as primary soundings were manually selected.

The following fathometers were used during this survey:

<u>Vessel</u>	<u>S/N</u>	<u>Dates Used (DN)</u>
2930	A106N	278-313
2931	A105N	293-306
2932	C076	306-314

Least depths on dive items on DN 313 were acquired using a MOD-3 Diver Least Depth Gauge (s/n 68332).

## G. CORRECTIONS TO SOUNDINGS

Sound velocity profiles of the water column were determined using a Seacat Conductivity, Temperature and Depth (CTD) profiler (model SBE-19, S/N 286). The profiler was calibrated on December 17, 1993, during WHITING's winter inport period. A copy of the calibration report is included in Separate IV. \*

After the CTD cast, programs *CAT 2.00* and *VELOCITY 2.10/2.11* were used to process the data, select significant data points, and create a corrector table. The velocity correctors were manually entered into an HDAPS velocity table. The correctors were reapplied to both high (100 kHz) and low (24 kHz) frequency beams following acquisition. Velocity profile data are in Separate IV submitted with this survey. \*

Data Quality Assurance (DQA) for the Seacat CTD profiler was performed by using a hydrometer and a thermometer to measure the density and temperature of a surface water sample taken during the CTD cast; program *CAT* compared these values to the CTD surface values, and confirmed that the velocity probe was working properly.

Five velocity casts were taken to generate corrector tables. A sixth was taken in conjunction with the MOD-3 diver least depth gauge. The six casts are summarized in the following table:

<u>DN</u>	<u>Vel.Table#</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u>
278	3, 4	31° 56' 43"N	080° 43' 37"W	15.6 m
288	10, 11	31° 56' 30"N	080° 43' 54"W	14.9 m
293	13, 14	31° 54' 48"N	080° 48' 42"W	12.5 m
303	17, 18	31° 54' 30"N	080° 47' 30"W	14.1 m
313	22, 23	31° 59' 39"N	080° 47' 03"W	15.9 m
313	MOD-3	31° 55' 09"N	080° 47' 01"W	13.9 m

There were no variations in instrument initials.

Program *DAILYDQA* was used to make sure the MOD-3 diver gauge was working properly. Daily results all fell within specified operating ranges. Refer to Separate IV. \* Additionally, a CTD cast was done concurrent with its use.

Bar checks were performed on launches 1014 and 1015 in accordance with the requirements stated in the Field Procedures Manual (FPM). No corrections to soundings were applied based on bar check data.

Leadlines were made on April 10, 1993. Calibrations were performed on March 17, 1994 and the leadline error was negligible. A leadline/DSF-6000N comparison was performed on WHITING on October 20, 1994 (DN 293). On average, the leadline reading was less than 0.2 meters deeper than the high frequency digitized reading and less than 0.1 meters deeper than



the low frequency digitized reading. No corrections for the differences were applied to the survey data. The leadline/DSF-6000N comparison performed during H-10577 is on file at N/CG244. \*

The correction for the static draft for launches 1014 and 1015 is 0.55 meters, as measured on July 28, 1993. The correction for WHITING's static draft is 3.2 meters, a historical value that WHITING divers confirmed by pneumatic depth gauge on May 20, 1993.

Settlement and squat measurements for launch 1014 (Offset Table 2) and launch 1015 (Offset Table 1) were conducted and correctors determined on April 4, 1994. Settlement and squat measurements for WHITING (Offset Table 9) were conducted and correctors determined on November 10, 1993. The settlement and squat correctors were applied to the sounding data in real time on each survey platform. Settlement and squat corrector tables are in Separate IV. \*

For data acquired by WHITING, the HDAPS data acquisition computer logged heave data from a Datawell b/v heave, roll, and pitch sensor (HIPPY, S/N 19109-C). Heave correctors were applied in processing. Heave correctors were applied during processing for launches 1014 and 1015 by manually scanning the echograms.

The tidal datum for this project is Mean Lower Low Water. The operating tide station at Fort Pulaski, Georgia (867-0870) served as the reference station for predicted tides. No tidal zoning was done for this survey. Predicted tides were applied to data using no time correction, and a 0.99 tidal height ratio. Tidal data used during data acquisition were taken from Table 2 of the East Coast of North and South America Tide Tables and were applied to the digital data during acquisition by HDAPS. Digital tidal data were received on floppy disk from N/CG24, Hydrographic Surveys Branch.

WHITING installed a tide station at Tybee Marina (867-1029) for datum control of H-10577. Opening and closing levels were run on September 27, 1994 and on November 12, 1994, respectively. A request for smooth tides was submitted to the Product and Services Branch, N/OES231, Datums Section, on November 18, 1994. *APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING.*

#### **H. CONTROL STATIONS** *SEE ALSO SECTION H. OF THE EVALUATION REPORT.*

The horizontal datum for this project is the North American Datum of 1983 (NAD-83). The primary control for this survey was a Differential GPS station set up on a tower over the "SOUTH END" benchmark on Tybee Island, Georgia. Additionally, WHITING used the forward range marker on Jones Island Range for performance checks. The adjusted NAD-83 positions for SOUTH END (2nd Order Class I) and Jones Island Forward Range (4th Order) were provided by the Field Photogrammetry Section on August 16, 1994. The positions are as follows:

*\*DATA FILED WITH FIELD RECORDS.*

	<u>Latitude</u>	<u>Longitude</u>
South End	31° 59' 14.30661" N	080° 51' 04.85098" W
Jones Island Range, Front	32° 02' 31.71243" N	080° 51' 10.09256" W

WHITING used *MONITOR* version 1.2 to verify the station position, and to check for multipath in the area. The *OUTLIER.SUM* file and associated scatter-plot are in Separate III.

DATA FILED WITH  
FIELD RECORDS.

## I. HYDROGRAPHIC POSITION CONTROL

A Differential Global Positioning System (DGPS) was used as the navigation system for this survey. WHITING and both launches used an Ashtech Sensor GPS receiver with a Maxon VHF receiver supplying correctors for DGPS navigation. Ashtech receivers were initialized by HDAPS; MAXON radios were set to the appropriate frequency.

DGPS positioning was accomplished in accordance with the FPM, section 3.4. Horizontal Dilution of Precision (HDOP) limits were computed as required in section 3.4.2 of the FPM. The HDOP limit for a 1:10,000 scale survey for the South End station is 5.5. No position flyers were encountered. All suspect positions (high HDOP, DR'ed positions, high EPE) were examined for reliability. Questionable positions were either smoothed or rejected.

The serial numbers of the Ashtech Sensor and MAXON radio-receivers used are as follows:

	<u>Device</u>	<u>Serial Number</u>
WHITING (Primary)	Ashtech Sensor	700417B1193
	MAXON	01007558
Launch 1014	Ashtech Sensor	700417B1203
	MAXON	57354
Launch 1015	Ashtech Sensor	700417B1191
	MAXON	20813457

DGPS performance checks were done in two stages. The first stage was to send Launch 1015 to the Jones Island Front Range marker. The launch would take ten detached positions and compare them to the known position. All DGPS performance checks confirmed that the DGPS beacon was operating properly. Stage two was conducted with each launch securely housed in WHITING's davits. Simultaneous HDAPS positions were compared between WHITING and each launch; an offset in distance and azimuth was then calculated between the ship and each launch system. A summary of the DGPS performance checks were submitted under separate cover for the entire project to N/CG244 on November 18, 1994.

DGPS antenna offsets and laybacks were measured on March 19, 1993, for WHITING, and on July 28, 1993, for launches 1014 and 1015. Offsets and laybacks were measured using the 100 kHz (high frequency) echosounder transducer as the reference. Antenna heights were also measured on the same respective dates shown above, using the water line as the reference. The offsets and laybacks were applied by HDAPS on-line. A minimum of four satellites were used during survey H-10577 (1:10,000), providing altitude unconstrained positioning.

Offsets and laybacks for WHITING's SSS towfish A-frame were measured on July 27, 1992, using the forward 100 kHz (high frequency) transducer as the reference. The A-frame height was measured from the water line on the same date.

Offset, layback, and height corrections for each launch's SSS aft towing boom were measured on July 28, 1993, and verified on April 5, 1994.

All offset, layback, and height data were applied by HDAPS on-line. These data are on file at N/CG244\* Correctors from offset table 1 were applied to all data acquired from launch 1015. Correctors from offset table 2 were applied to all data acquired from launch 1014. Correctors from offset table 9 were applied to all data acquired from WHITING.

## **J. SHORELINE**

There is no shoreline within the survey limits of H-10577.

## **K. CROSSLINES**

A total of 51.95 nautical miles of crosslines were run for H-10577. This amounts to 9.73% of the 100% mainscheme miles run. Crosslines and main-scheme agreement, with predicted tides applied, was adequate. Most soundings agreed to within 0.3 meters. Differences greater than 0.4 meters are in the northeast corner, and in the dumping grounds.

WHITING has found two factors which may contribute to this disagreement. Sand waves area readily apparent in the northwest corner. Side scan sonar run in the dumping ground on DN 312 verifies the presence of sand waves. WHITING believes the sand waves are a source of the larger crossline discrepancies. The other source is a discrepancy between predicted and actual tides that occurred during the survey. There was heavy rain in the area in early and mid-October. Unusually high tide levels were observed. Graphs showing predicted and actual tides for October (See Appendix V)\*received from N/OES231, verify that this was the case.

*\* DATA FILED WITH FIELD RECORDS.*

**L. JUNCTIONS** SEE ALSO SECTION L. OF THE EVALUATION REPORT.

Survey H-10577 junctions with H-10576 (WH-10-9-94) to the southwest. General agreement is adequate, although H-10577's soundings are consistently shoaler by 0.3 to 0.7 meters. The difference between predicted and real tides that was discussed in the previous section may explain this. H-10577's junction with H-10583 (WH-10-12-94) shows adequate agreement, with soundings agreeing to within 0.3 meters in most cases. Differences of greater than 0.3 meters were only found in areas known to have large sand waves (approximately 1 meter).

**M. COMPARISONS WITH PRIOR SURVEYS** SEE ALSO SECTION M. OF THE EVALUATION REPORT.

Three prior surveys, H-9144, H-9197, and H-9865, have soundings which fall within the survey limits for H-10577. Note that all of these surveys are referenced to NAD-27 horizontal datum and Mean Lower Water vertical datum. All comparisons were done in feet.

Survey H-9144 (1974, 1:40,000) covers the southern third and eastern edge of the survey area. General bottom topography agreement is excellent. Current soundings in the south are up to 0.6 meters shoaler (0-2 feet), while soundings along the eastern edge agree to within 0.3 meters ( $\pm 1$  foot).

Survey H-9197 (1973, 1:20,000) covers the entire survey area except for the northwest corner and the southern third. Bottom topography agreement is excellent. North of the channel soundings are 0.6 to 0.9 meters deeper (2-3 feet). Dramatic shoaling (up to 3.7 meters, or 12 feet) is present in the current dumping grounds (10.0 meter sounding at 31° 56' 44.184"N, 080° 44' 24.101" W, 7.3 meter sounding at 31° 57' 41.054"N, 080° 44' 52.616" W). Otherwise current soundings agree to within 0.3 meters ( $\pm 1$  foot).

Survey H-9865 (1980, 1:20,000) covers the northwest corner of the survey area. Current soundings agree to within 0.6 meters ( $\pm 2$  feet).

**N. ITEM INVESTIGATIONS**

The following table summarizes the investigations of all assigned AWOIS items:

N.1	AWOIS 2674	Disproved
N.2	AWOIS 7451	Verified
N.3	AWOIS 8917	New Obstruction Found
N.4	AWOIS 8918	<del>Disproved</del> Retain as charted

N.1 AWOIS 2674

Reported Latitude: 31° 59' 35.77" N  
Reported Longitude: 080° 47' 04.39" W  
Source: NM 35/61, NM 02/62 ✓  
Name: Sunken Barge (UNKNOWN)  
Datum: NAD 83  
Reported Depth: 29.0 feet  
Survey Requirements: S2 (500 meter radius), DI, ES, SD, BD

The search requirements specify that side scan sonar coverage is not required in or north of the channel. The rest of the search area was covered with 200% side scan sonar. One contact (836.22P, XREF 859.49S and 862.12) was found right in the area of the buoy. Divers examined this contact on DN 313 and determined that it was the buoy anchor. A fifteen meter circle search was performed; nothing else was found.

WHITING recommends the removal of this item from the chart. *CONCUR*

N.2 AWOIS 7451

Reported Latitude: 31° 58' 28.77" N  
Reported Longitude: 080° 47' 56.39" W  
Source: CL 1189/85, NM 52/85  
Name: CARRIER DOVE  
Datum: NAD 83  
Reported Depth: Unknown  
Survey Requirements: S2 (250 meter radius), DI, ES, SD, BD

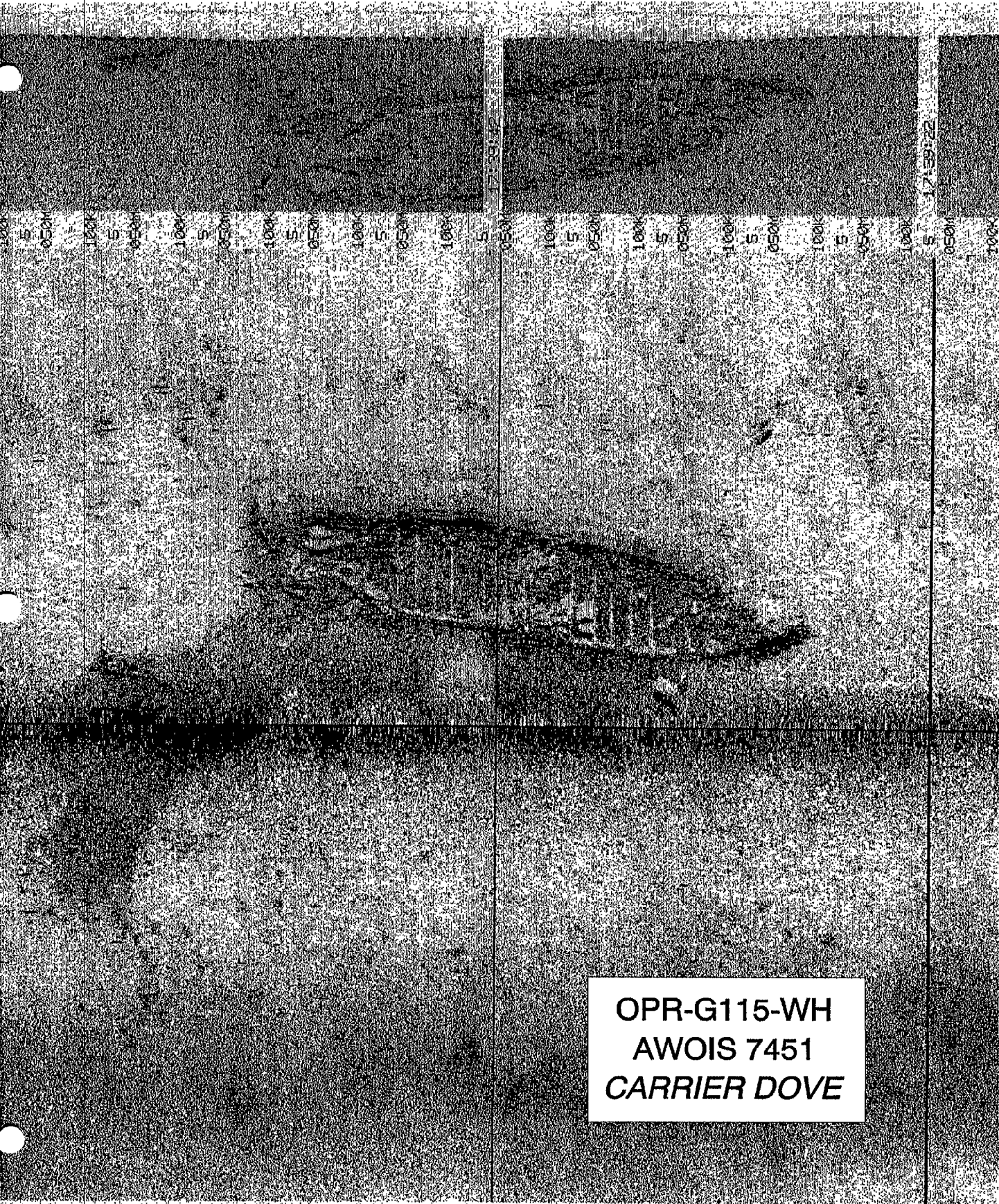
A large wreck was found on the first line of side scan sonar (contact 881.18P). Subsequent lines were run to pinpoint the position for divers (contacts 886.26S, 888.42P, 893.19S). The water visibility during the dive was so poor that the wreck's dimensions were estimated from side scan contact 893.19S. The wreck is approximately 65 meters long and 13 meters wide, with her bow pointing east. This compares favorably to the description: 217 feet (66.1 meters) long and 41.8 feet (12.7 meters) wide. A copy of the side scan trace is included on the following page.

Divers examined the wreck on DN 313. They discovered wreckage, but were unable to make out specific items due to limited visibility (less than 1 foot). Divers searched around the wreckage with a tag-line and found two posts, possibly ribs, standing approximately 15 feet off the bottom. Least depth (*APPROVED* predicted tides) by MOD-3 gauge was 10 feet (3.1 meters) in 20 feet (6.0 meters) of water. DP #3063 was taken, 343.5 meters from the charted position of the wreck.

WHITING recommends that a dangerous wreck with a least depth known <sup>10FT (3.1m)</sup> be charted at: ✓

Latitude: 31° 58' 36.237" N Longitude: 80° 47' 46.663" W

IT IS ALSO RECOMMENDED THAT A DANGER CURVE BE ADDED AND THE CHARTED DANGEROUS SUNKEN WRECK, <sup>10</sup> DEPTH UNKNOWN, PA, BE DELETED.



OPR-G115-WH  
AWOIS 7451  
CARRIER DOVE

N.3 AWOIS 8917

Reported Latitude: 31° 54' 12.00" N  
 Reported Longitude: 080° 44' 14.38" W  
 Source: CL 89/91  
 Name: Obstruction - Fish Haven  
 Datum: NAD 83  
 Authorized Depth: 28 feet  
 Survey Requirements: S2 (within charted limits), ES

The survey requirements were changed with verbal approval from N/CG241. Since this fish haven is charted with no information other than "(auth min 28 ft)", the purpose of this investigation was not to examine all contacts, but to verify that none rise above the authorized minimum of 28 feet. As a result WHITING conducted mainscheme echosounder lines (100 meter line spacing), split by side scan sonar lines. Two different types of contacts were found: very large "bricks", and smaller "rubble".

The bricks (contacts 8896.56P and 8897.19P) appear to be 8 meters wide and 30 meters long. Echosounder least depths on the items (at MLLW with predicted tides) are 34 feet (10.3 meters, 9441.13) and 29 feet (8.9 meters, 9087.12). Because they are deeper than 28 feet they do not need to be charted. *CONCUR*

The second type of contact (rubble) resembles a boulder field - large quantities of smaller, yet significant contacts. Refer to Separate V for a listing of the contacts picked off. One of the contacts, 9047.56, had an associated fathometer least depth of 28 feet. Because this was right at the borderline of acceptability, WHITING sent divers down to investigate.

Divers examined the area on DN 313 and discovered scattered concrete pipes. They used their diver depth gauges to estimate the shoalest point, and then measured it with the MOD-3 gauge. Least depth (at MLLW with predicted tides) was 25 feet (7.7 meters) in 33 feet (10.0 meters) of water. DP #3069 was taken.

WHITING recommends that an obstruction with least depth known be charted at:  
 Latitude: 31° 55' 02.755" N Longitude: 080° 46' 50.712" W *CONCUR*

N.4 AWOIS 8918

Reported Latitude: 31° 57' 02.78" N  
 Reported Longitude: 080° 44' 14.38" W  
 Source: CL 921/59  
 Name: Obstruction - Fish Haven (Old Refrigerators)  
 Datum: NAD 83

Reported Depth: Unknown  
Survey Requirements: S2 (200 meter radius), ES

The entire search radius was covered with 200% side scan sonar. No contacts were found.  
WHITING recommends the removal of this item from the chart. ~~CONCUR~~ Retain as charted

**O. COMPARISON WITH THE CHART** SEE ALSO SECTION O. OF THE EVALUATION REPORT.

Soundings from chart 11512 (52nd ed., January 07/92, 1:40,000) were compared to H-10577 soundings. General bottom topography agreement was excellent. North of Tybee Range current soundings are 0.5 to 1.5 meters deeper than charted soundings. Southwest of the channel are large sand waves (approximately 1 to 2 meters). Migration of the sand waves explains the differences in this area - some deeper, some shoaler. South of the channel current soundings are 0 to 1 meter deeper. Further south soundings agree to within 0.2 meters.

Reports listing the uncharted submerged features discovered were submitted to the Coast Guard on October 28, 1994.

No changes to the scale, coverage, or format of Chart 11512 are recommended.

**P. ADEQUACY OF SURVEY** SEE ALSO SECTION P. OF THE EVALUATION REPORT.

All items found during this survey have been completely resolved. This survey is complete and of adequate quality to supersede all prior surveys of the area.

**Q. AIDS TO NAVIGATION**

Ten buoys were examined by Launch 1015. Characteristics to all floating aids to navigation within the survey limits were verified as depicted. The items examined were as follows:

<u>Light List #</u>	<u>Name</u>	<u>Position Number</u>	<u>ΔD (meters)</u>
3965	R "6"	1029	44.65
3960	G "5"	1028	26.59
3955	R "4"	1030	37.17
3950	G "3"	1031	45.58
3945	R "2"	1034	67.83
3940	G "1"	1033	14.27
235/3920	R W "T"	1035	579.78--NOT IN SURVEY
240	Y "A"	1036	19.82 AREA
245	Y "B"	1037	17.62
Not Listed	Y "SAV"	1038	382.10



$\Delta D$  is the distance from the survey position to the charted position of the buoy. R W "T" was moved to a new position as of LNM 40/94. Compared to the old location of the buoy, DP #1035 differs by 887.14 meters. A letter was sent to the Coast Guard indicating the buoy locations measured by WHITING. Refer to Appendix I. DATA FILED WITH FIELD RECORDS.

There were no bridges, overhead cables, pipelines, or submarine cables, ferry routes or ferry terminals in the survey area.

## R. STATISTICS

Number of Positions .....	4926
Main-scheme Sounding Lines (Nautical Miles) .....	533.76
Crosslines (Nautical Miles) .....	51.95
Square Nautical Miles Surveyed .....	28.33
Days of Production .....	17
Detached Positions .....	12
Bottom Samples .....	81
Tide Stations Installed .....	1
Current Stations .....	None
Number of CTD Casts .....	6
Magnetic Stations .....	None

## S. MISCELLANEOUS

Bottom samples for the survey area were acquired in accordance with the Project Instructions. As specified in the Project Instructions, the samples were taken on an approximate grid spacing of 1000 meters square. Due to inclement weather at the end of the survey, 27 of the 108 bottom samples were not obtained. Because of the agreement with historical bottom samples, and the similarity of bottom samples collected nearby, WHITING is confident that the 81 samples collected adequately describe the nature of the seabed. Oceanographic log sheets for H-10577 are submitted with the separates for this survey. Bottom samples were submitted to the Smithsonian Institution.

No current studies were done in the area. No unusual magnetic variations were encountered in the survey area. No unusual submarine features were discovered.

## T. RECOMMENDATIONS SEE ALSO SECTION P. OF THE EVALUATION REPORT.

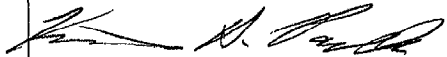
H-10577 is complete and without inadequacies. No additional fieldwork is required. Tybee Range is a Corps of Engineers maintained channel. There are no other current plans for construction or dredging in the survey area.

**U. REFERRAL TO OTHER REPORTS**

The following reports were submitted under separate cover as part of OPR-G115-WH:

Water Clarity Report  
User Evaluation Report

Submitted By:



ENS Kenneth A. Pavelle, NOAA  
Junior Officer, NOAA Ship WHITING

16:12:36 29 Nov 1994

[illegible]



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
Office of NOAA Corps Operations  
NOAA Ship WHITING S-329  
439 W. York Street  
Norfolk, VA 23510-1114  
October 28, 1994

Commander, (OAN)  
Seventh Coast Guard District  
Brickell Plaza Federal Building Room 406  
909 SE First Avenue  
Miami, Florida 33131-5621

Dear Sir:

While conducting hydrographic survey operations off of Tybee Island, Georgia, the NOAA Ship WHITING discovered an obstruction in the privately maintained "SAV" fish haven, which comes up above the authorized depth of 28 feet. WHITING also measured significant differences between the actual and charted positions of several buoys in and near Tybee Range. Enclosed are reports on these features and a chartlet indicating their locations.

Differential GPS was used to determine the items' positions. Positions are referenced to NAD-83. All depths are referenced to MLLW using predicted tides. Chart 11512 is the affected chart.

A copy of this letter and attachments have been forwarded to the following offices:

Chief, Nautical Charting Division, NOAA  
Chief, Atlantic Hydrographic Section  
Chief, Operations Division, NOAA  
Director, Defense Mapping Agency  
Hydrographic/Topographic Center  
Fisheries Chief, Georgia Department of Natural Resources

Sincerely,

John D. Wilder  
Commander, NOAA  
Commanding Officer

Enclosures

cc: AMC1  
N/CG2  
N/CG244  
DMAHTC  
Georgia DNR



REPORT OF UNCHARTED SUBMERGED FEATURE

Hydrographic Survey Registry Number: H-10577

State: Georgia

General Locality: Atlantic Ocean

Sublocality: 5 nm southeast of Tybee Inlet

Project Number: OPR-G115-WH-94

Ref: AWOIS # 8917

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

A "boulder field" of scattered concrete pipes was found with side scan sonar and examined by divers.

**Covers:**

Divers used a MOD-3 diver least depth gauge to determine the least depth. Their findings indicate a least depth of 7.7 meters (25 feet) corrected to MLLW with ~~predicted~~ <sup>approved</sup> tide correctors.

**Affected Nautical Charts:**

Chart Number	Edition No. Date	Reported Depth	Chart Datum	Geographic Location Latitude	Longitude
11509	24 08/27/94	25 ft	NAD83	31°55'02.755"N	080°46'50.712"W
11512	40 01/08/94				

This obstruction falls within the limits of the "SAV" Fish Haven, privately maintained by the Georgia Department of Natural Resources. NOAA Chart 11512 lists the authorized depth as 28 feet.

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

# REPORT OF BUOY POSITIONS

Hydrographic Survey Registry Number: H-10577

State: Georgia

General Locality: Atlantic Ocean

Sublocality: 5 nm southeast of Tybee Inlet

Project Number: OPR-G115-WH-94

Several buoys were positioned as part of hydrographic survey H-10577, and found to differ as much as 900 meters from their charted positions. The following is a listing of all buoys examined and their respective position as measured by the NOAA Ship WHITING:

<u>Light List #</u>	<u>Name</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Position</u>	<u>c/l</u>
3965	R "6"	031°59'47.357"N	080°47'00.971"W	1029	124
3960	G "5"	031°59'37.252"N	080°47'07.755"W	1028	124
3955	R "4"	031°59'16.686"N	080°46'04.104"W	1030	124
3950	G "3"	031°59'10.051"N	080°46'08.443"W	1031	124
3945	R "2"	031°58'50.078"N	080°45'05.165"W	1034	124
3940	G "1"	031°58'42.608"N	080°45'09.011"W	1033	124
235/3920	R W "T"	031°57'53.270"N	080°43'09.379"W	1035	124
240	Y "A"	031°56'50.497"N	080°44'16.376"W	1036	124
245	Y "B"	031°55'52.152"N	080°44'20.093"W	1037	124
Not Listed	Y "SAV"	031°55'15.768"N	080°47'14.570"W	1038	124

## Affected Nautical Charts:

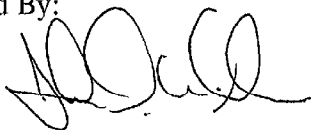
<u>Chart Number</u>	<u>Edition No.</u>	<u>Edition Date</u>	<u>Datum</u>
11509	24th	08/27/94	NAD83
11512	40th	01/08/94	NAD83
11513	21st	06/04/94	NAD83

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

**APPROVAL SHEET  
HYDROGRAPHIC SURVEY  
OPR-G115-WH  
1994  
WH-10-10-94  
H-10577**

The data for this survey were acquired and checked under my daily supervision. Position and sounding accuracy meet the requirements specified in the Field Project Instructions, Hydrographic Manual, Hydrographic Survey Guidelines and the Field Procedures Manual for Hydrographic Surveying. This survey is complete and adequate for the intended purpose of delineating bottom topography, determining depths and identifying all potential dangers to navigation. No final field sheets were prepared for this survey. The survey data and accompanying records are complete for the preparation of the smooth sheet.

Approved By:



Commander John D. Wilder, NOAA  
Commanding Officer, NOAA Ship WHITING



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Ocean and Earth Sciences  
Silver Spring, Maryland 20910

# TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 9, 1995

HYDROGRAPHIC SECTION: Atlantic

HYDROGRAPHIC PROJECT: OPR-G115-WH

HYDROGRAPHIC SHEET: H-10577

LOCALITY: Approach to Savannah River

TIME PERIOD: October 5 - November 10, 1994

TIDE STATION USED: 867-1029 Tybee Marina, Ga.  
Lat.  $31^{\circ} 59.8'N$  Lon.  $80^{\circ} 51.3'W$

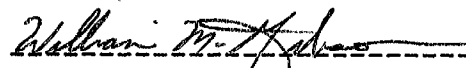
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 6.69 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 6.9 ft.

REMARKS: RECOMMENDED ZONING

Apply a -20 minute time correction and a x1.02 range ratio to heights using Tybee Marina, Ga. (867-1029).

Note: Times are tabulated in Eastern Standard Time.

  
CHIEF, DATUMS SECTION





## GEOGRAPHIC NAMES

H-10577

Name on Survey	A ON CHART NO. 11512	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
Atlantic Ocean (title)	X									1
Georgia (title)	X									2
Tybee Inlet (title)	X									3
										4
										5
										6
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										25

08/11/95

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: H-10577

NUMBER OF CONTROL STATIONS 2

NUMBER OF POSITIONS 4926

NUMBER OF SOUNDINGS 33015

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	56	12/17/94
VERIFICATION OF FIELD DATA	69	07/28/95
QUALITY CONTROL CHECKS	27	
EVALUATION AND ANALYSIS	7	
FINAL INSPECTION	9	08/10/95
COMPILATION	0	/ /
TOTAL TIME	168	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 08/11/95

**ATLANTIC HYDROGRAPHIC SECTION  
EVALUATION REPORT FOR H-10577 (1994)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**H. CONTROL**

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83).

To place this survey on the NAD 27, move the projection lines 0.783 seconds (24.11 meters or 2.41 mm at the scale of the survey) north in latitude, and 0.613 seconds (16.09 meters or 1.60 mm at the scale of the survey) east in longitude.

**L. JUNCTIONS**

H-10576 (1994) to the southwest  
H-10582 (1994-95) to the northwest

A standard junction was effected between the present survey and survey H-10577 (1994).

A standard junction could not be effected with survey H-10582 (1994-95). Junctional survey H-10582 (1994-95) has not reached the sounding stage of office processing. Any adjustments to the depth curves in the junctional areas of the present survey will need to be made on the chart during compilation, at headquarters.

There are no contemporary surveys to the north, east, or south. Present survey depths are in harmony with the charted hydrography to the north, east, and south.

**M. COMPARISON WITH PRIOR SURVEYS**

Hydrographic

H-9144 (1934) 1:40,000  
H-9197 (1973) 1:20,000  
H-9865 (1980) 1:20,000

Prior survey depths from H-9144 (1934) compare favorably and show a general trend of being 1 ft to 2 ft ( $0^3\text{m}$  to  $0^6\text{m}$ ) shoaler than present survey depths.

Prior survey depths from H-9197 (1973) compare favorably and show a general trend of being 1 ft to 2 ft ( $0^3\text{m}$  to  $0^6\text{m}$ ) shoaler than present survey depths. There are some scattered depths in

the vicinity of latitude 31°58'45"N, longitude 80°47'15"W that are 7 ft (2<sup>1</sup>m) shoaler than present survey depths. A widening and deepening of the Tybee Range Channel since the prior survey has caused prior survey depths to be 4 ft to 31 ft (1<sup>2</sup>m to 9<sup>4</sup>m) shoaler than present survey depths. There are some scattered depths throughout the prior survey that are 5 ft to 15 ft (1<sup>5</sup>m to 4<sup>5</sup>m) deeper than present survey depths.

Prior survey depths from H-9865 (1980) compare favorably and show a general trend of being 1 ft to 2 ft (0<sup>3</sup>m to 0<sup>6</sup>m) shoaler than present survey depths. There are some scattered depths that are 3 ft to 10 ft (0<sup>9</sup>m to 3m) shoaler than present survey depths.

The differences between the above prior survey depths and the present survey depths may be attributed to cultural and natural changes, dredging, and improved hydrographic surveying and equipment.

The present survey is adequate to supersede the prior surveys within the common area.

**O. COMPARISON WITH CHARTS 11512 (52<sup>nd</sup>. Ed, Jan 8/94)**

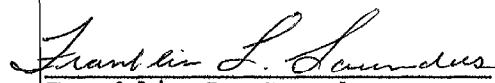
The charted hydrography originates with the previously discussed prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in sections N. and O. of the Descriptive Report.


The present survey is adequate to supersede the charted hydrography within the common area.

**P. ADEQUACY OF SURVEY**

This is an adequate hydrographic/side scan sonar survey. No additional work is recommended.

WHITING Processing Team

  
Franklin L. Saunders  
Cartographic Technician

  
Norris A. Wike  
Cartographer

APPROVAL SHEET  
H-10577

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Deborah A. Bland  
Deborah A. Bland  
Cartographer  
Atlantic Hydrographic Branch

Date: \_\_\_\_\_

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Nicholas E. Perugini  
Nicholas E. Perugini, CDR, NOAA  
Chief, Atlantic Hydrographic Branch

Date: Aug 11, 1995

\*\*\*\*\*

Final Approval:

Approved: Andrew A. Armstrong, III  
Andrew A. Armstrong, III  
Captain, NOAA  
Chief, Hydrographic Surveys Division

Date: Aug 16, 1995

MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 10577

## INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
11512	9/3/95	John Bahr	Full Part Before After Marine Center Approval Signed Via Drawing No. 50
11513	11/16/95	John Bahr	Full Part Before After Marine Center Approval Signed Via Drawing No. 40 App'd thru chrt 11512
11509	11/17/95	John Bahr	Full Part Before After Marine Center Approval Signed Via Drawing No. 38 App'd thru chrt 11512
11480	3/15/96	Travis Neumann	Full Part Before After Marine Center Approval Signed Via Drawing No. 41 App'd thru chrt 11509 <i>[Signature]</i> Full Part Before After Marine Center Approval Signed Via Drawing No.  Full Part Before After Marine Center Approval Signed Via Drawing No.  Full Part Before After Marine Center Approval Signed Via Drawing No.  Full Part Before After Marine Center Approval Signed Via Drawing No.